THE MIDLAND CHEMIST

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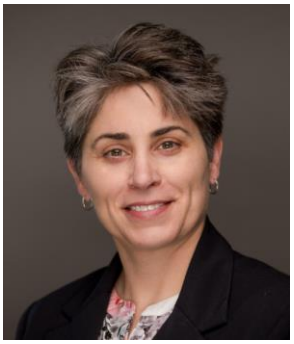
Contents

Chair Column – A Career in Chemistry Made Possible by You

Robbyn Prange, Chair, Midland Section ACS



Thirty years ago, I was working my summer job at Marine City Nursery – watering, replanting, and trimming a lot of trees and shrubs – putting what I could into my bank account as I entered my high school senior year. I spent a lot of time that summer thinking about what lie ahead after high school. I was raised in a family that supported my desire to attend college, but what would I study and how would I make college happen? As a first-generation college student from a small rural Michigan community, I saw few role models beyond teachers, lawyers, and doctors. And financially, college would only be an option with a significant portion of scholarships, grants, and/or financial aid.

There were a few factors that made my college dreams a reality: A quiet house to study and overwhelmingly supportive parents. A group of friends that cheered each other on and valued study groups. Teachers and professors who saw untapped potential and leadership beneath my shy personality. My aptitude and work ethic. However, an incredibly important addition to the group of factors bringing my college, graduate, and professional chemistry aspirations to fruition was made possible by strangers. I attended Hope College because a Hope College Alumni Scholarship, a Federal Pell Grant, and a handful of local scholarships made it financially feasible.

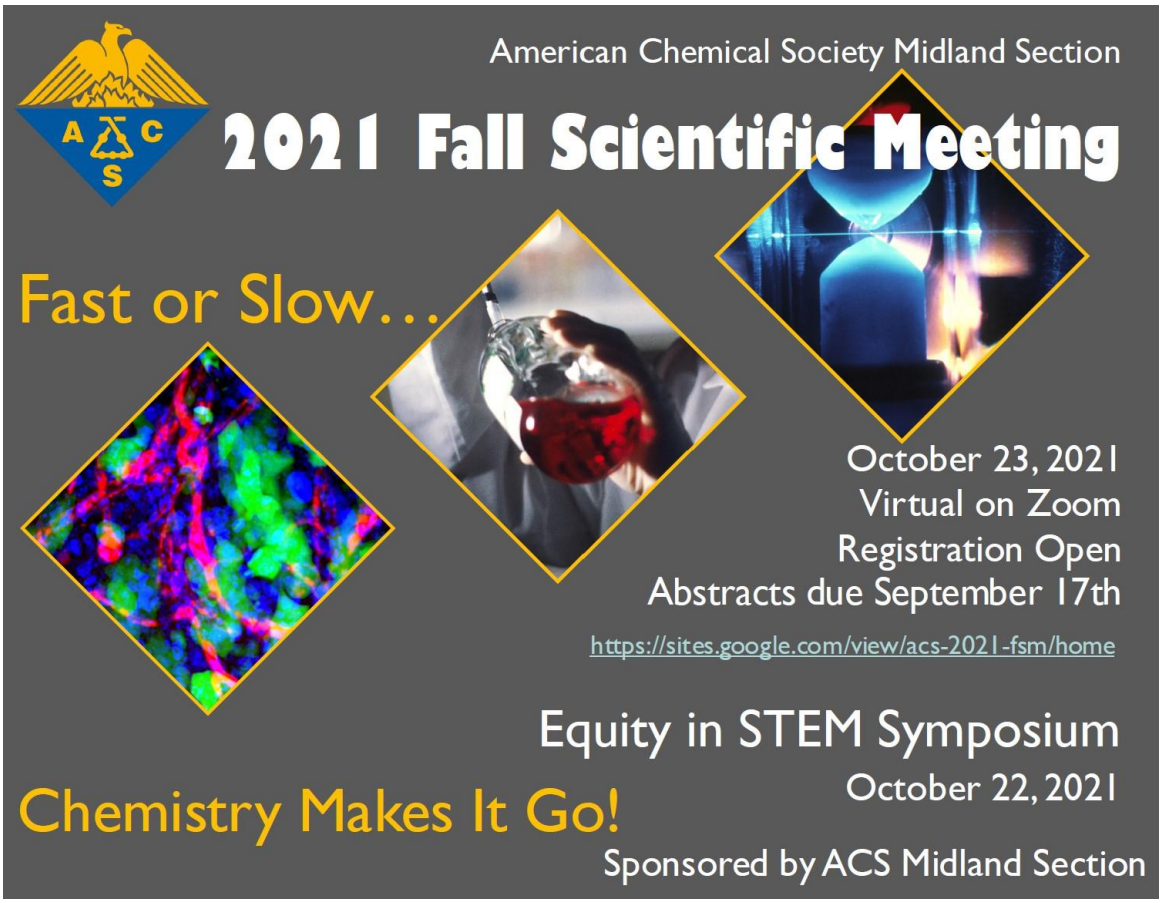
I don't know exactly who donated to make the scholarships I received possible, but I bet it was people like you: Professionals passionate about their field. Individuals committed to fostering science interest and opportunities for young people. People who value education. While I've never met most of them nor even know their names, I'm forever grateful to those donors who helped make my chemistry career possible.

The local scholarships I received are similar to the Midland Section of the American Chemical Society Endowed Scholarship Fund #399. This scholarship fund is aiming for a $100,000 fundraising goal, kickstarted by Dr. Wendell and Marcia Dilling's 1:1 match of any new contributions over the next couple of years. This scholarship provides awards ranging from $1,000-$2,000, an award that can be the difference to someone entering and completing college. (See the accompanying article on page 12.)

Let's invest in the next generation of students and professionals and look forward to future chemistry careers that we can help make possible now. Thank you.

2021 Fall Scientific Meeting

Margaret Hwang, Fall Scientific Meeting Committee, Midland Section ACS



Fall Scientific Meeting Invited Speakers:

- Babak Borhan (Keynote), MSU Dept. of Chemistry
- Nirala Singh, UofM Dept. of Chemical Engineering
- Bingbing Li, CMU Dept. of Chemistry
- Jake Steinbrecher, Dow Automotive & Elastomers

Fall Scientific Meeting Registration:
To register for the 2021 Fall Scientific Meeting, go to https://sites.google.com/view/acs-2021-fsm/home.

Fall Scientific Meeting Abstract Submissions:
The deadline for abstract submissions for oral and poster presentations is Friday, September 17. Please submit your abstracts to acsfallsubmits@gmail.com. For more information, please see ACS 2021 FSM (google.com).

Equity in STEM Symposium Information:
The deadline for abstract submissions for poster presentations is Friday, September 17. For more information, please see ACS 2021 FSM (google.com). For any questions, please contact the STEM Symposium co-organizers, Bingbing Li at li3b@cmich.edu or Gina Malczewski at reginamalczewski@gmail.com.

The first 20 students to register as presenters will receive an Amazon gift card worth $25. Awards will be presented for the three best posters in the Fall Scientific Meeting, and for the single best poster in the Equity in STEM Symposium.

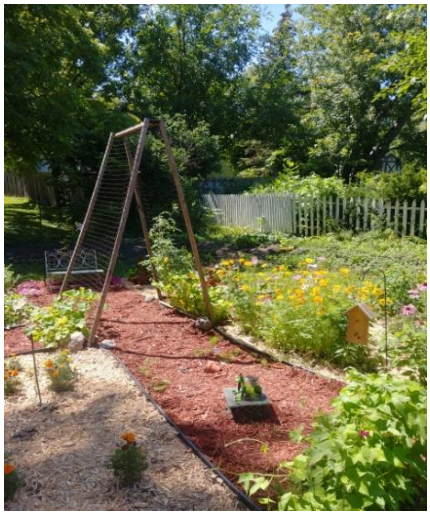
The Midland ACS Garden Is Growing

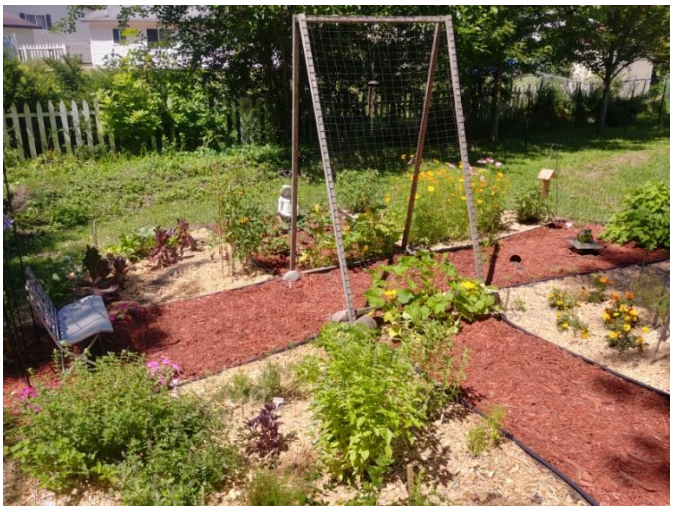
Gina Malczewski, Director and Outreach Committee, Midland Section ACS

The Midland Section ACS effort at the Creative 360 Community Garden (1517 Bayliss Street, in Midland) is growing in more ways than one! We have had garden plots there since 2015, when our recycled bottle greenhouse was first built on the site – and due to our engagement with the garden in those six years, we now manage it. 2021 has been highly successful in terms of the number of gardeners, number of plots rented, volunteer hours documented, and the overall appearance of the garden due to trimming and weeding. The Midland Section ACS has donated over 130 lb. of produce to local food pantries from our garden plots and in-kind contributions so far this season.

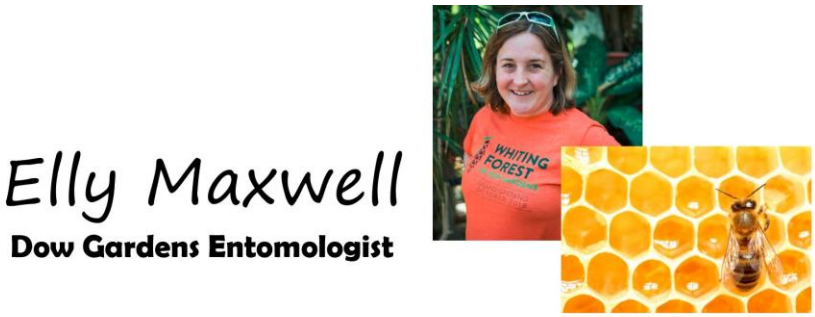
The most visible "growth" in 2021, however, has been the addition of a children's garden, financed by a $1,000 grant through the Midland Area Community Foundation, for the purpose of educating children about plants, pollinators, environmental stewardship, and natural chemistry. This garden was completed in early August and programming (**Sprouts and STEMs**) has begun.

A **Fireflies and Wings** program was held on August 31, with a garden tour, and information about fireflies and the science of "glow." In addition, participants were given "wings" that they could decorate with glow-in-the-dark stickers, firefly necklaces, and a book was read aloud about the insects. On September 15, Dow Gardens Entomologist Elly Maxwell brought her **live bee frame**, and there was **honey tasting**.





Views of the new Children's Garden at Creative 360 in early August 2021 (*Photos courtesy of Gina Malczewski*)

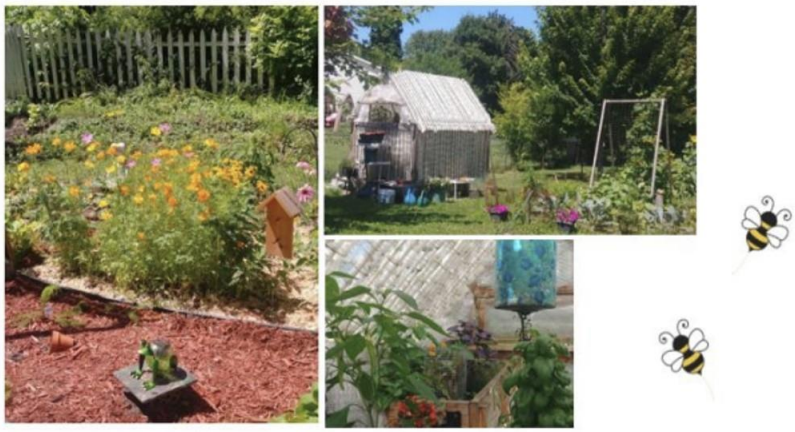


On September 22, we are planning a **Pizza Plants and Garden Greens** program featuring free grilled pizza with toppings, tea, and salad made from the ACS garden produce. All of the programs are free, although some (like **Pizza Plants**) may require registration with Creative 360 (989-837-1885) only to ensure that enough supplies are on hand.

Keep an eye on our Facebook page, website homepage, and/or subscribe to the Creative 360 newsletter to keep abreast of what's happening, or you can always contact Gina Malczewski at reginamalczewski@gmail.com for information. We hope our garden programs continues to GROW – this year and beyond!

Pizza Plants and Garden Greens Program

Gina Malczewski, Director and Outreach Committee, Midland Section ACS



Sprouts and STEMs Garden Program

The Midland Section of the American Chemical Society and Creative 360 invite you to:

"Pizza Plants and Garden Greens"
September 22, 2021, 6:15-7:15 pm
Creative 360, 1517 Bayliss St, Midland

where we will discuss the vegetables and herbs that are used to make our favorite "pie" --and then you can customize your own! We will supply basic cheese pizza cooked on the grill, as well as dried and fresh herbs and some veggies for embellishment. Salads and teas/water made from our garden herbs will also be offered…and everything is FREE.

Meet at the Pavilion outside (if it rains, we will use the inside gallery.) Some fresh and dried herbs will also be available to take home.
Registration at 989-837-1885 or at https://becreative360.org/classes/ is required so we can obtain adequate supplies.

Creative 360 Stage, Studios & Gallery

ACS Chemistry for Life® American Chemical Society

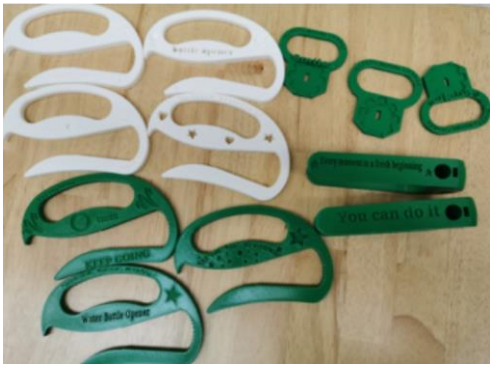
STEAM Stew IV – Mars , Silicones, Fractals, and More!

Gina Malczewski, Director and Outreach Committee, Midland Section ACS

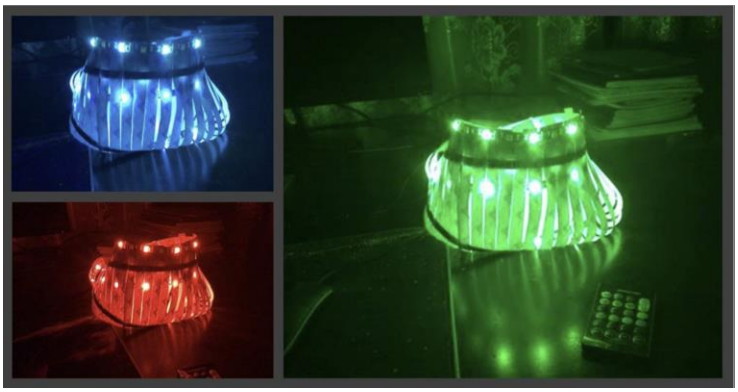
Our annual middle school camp was held virtually again this year, Monday through Friday, August 2 to 6, from 9:00 AM to Noon. The camp was free, subsidized by MSU and by several ACS donors (Saginaw Community Foundation, Nexteer Automotive, and Hemlock Semiconductor Operations, LLC). Supplies were mailed to the participants and activities were led live online, with "assignments" to be completed after the online hours. Our partners included Julie Zuo, Shu Guo, and Dr. Bingbing Li from Central Michigan University (microscopy, science ethics, tessellations, and interior design), Dr. Ed Stark from MSU (fractals), and Denice Blair and Dr. Shannon Schmoll from Abrams Planetarium. We relied on a number of ACS volunteers and assistance from Tracy Zhang, Clare Light, and Nick Henton of MSU.

Students did hands-on experiments with silicone materials, made a lotion, tested chemicals for toxic effects on radish seeds, made gummy bears and edible water pods while learning about bioplastics, studied Mars and contemplated designs for habitats that would allow human life to thrive there, and made a lamp from LEDs and tessellated polymer images. The student participants also used 3-D printing software to design a key chain (which was made and sent back to them) and customized some personal assistive device designs that were also printed and donated to the Makers Making Change program.

Gummy Bears



3-D Printed Assistive Devices



Lamps Made from LEDs and Tessellated Polymer Images

Twenty-five students participated from locations that included Midland, Bay City, Saginaw, Mount Pleasant, Detroit, and Okemos. The feedback we received was overwhelmingly positive, including: "I liked how we

cooked and worked in the kitchen to do experiments ourselves" to "Loved looking through the paperscope" and "Diluting the sugar solutions was what I liked best. It made me feel like a scientist." One parent remarked, "Emerald absolutely loved the camp and all of the activities. She often would do her own experiments after the Zoom meeting sessions were over."

A wonderful time and a meaningful educational experience were enjoyed by all this past summer, and we look forward to next year!

Rotary Club of Midland Honors Tom Lane with First-ever President's Award

Steve Keinath, Co-Editor, The Midland Chemist

Editor's note: This article is reprinted, in part, from the Saturday-Sunday, August 7-8, 2021 (Weekend) issue of the *Midland Daily News*.

Tom Lane has been a very active member of the American Chemical Society for many years, with the Midland local section, regionally, and nationally. Tom served in the following elected officer roles within the Midland local section: Secretary in 1982, Chair-Elect in 1985, Chair in 1986 and again 1996, Past Chair in 1987 and again 1997, Alternate Councilor in 2001-2002, and Councilor in 2005-2007.

At the national level, he served as the National ACS President in 2009, and then was named an ACS Fellow in 2011. Following his stint as the National ACS President in 2009, the Midland Section ACS leadership offered him a lifetime appointment as Director Emeritus on our local section board of directors.

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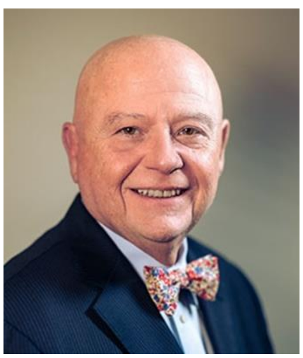


A special Midland figure recently was honored by the Rotary Club of Midland. **Dr. Thomas Lane** (photo at left) is the recipient of the Rotary Club of Midland's first-ever president's award.

"This award is to be given on an annual basis to a member – a super Rotarian, an unsung hero – of the president's choosing, with board support," said Carly Lillard, the club's 2020-21 president. Lane will receive an award and $500 donation in his name to the Rotary International Foundation.

"This is a fantastic way to honor a member of our club that exemplifies the Four-Way test and is a Rotary superhero in every sense of the word. We are so lucky to have Tom in our club and community; he is an incredible asset to our leadership and members," said 2021-22 President Dallas Rau. Lane's contributions to Rotary in time, talent, and treasure are likely unmatched by any current member of the club.

"He has provided leadership on committees and boards locally and district-wide. He invests his own money every year. Technically retired, Tom could put his feet up and enjoy each day knowing that he has done a stellar job as a Rotarian, yet he chooses to continue leading, sponsoring, and mentoring people locally, throughout the district, and internationally," Lillard said. "He actively participated in local, district, and international service efforts and conferences. He is an exemplary model for a lifetime of Service Above Self." In addition to all the fantastic work he does with the Rotary Club of Midland, Lane currently serves as a Rotary District 6310 assistant governor.

Lane received his undergraduate education in chemistry at Purdue University, a master's degree from Central Michigan University, and his Ph.D. in physical organic chemistry from The Open University in England. Both Purdue and CMU have recognized Lane with their Distinguished Alumni Award for his contributions to science, education, and his community. Lane also received The Open University's highest recognition for his contributions to education, the arts, and sciences with an honorary doctorate degree, which was presented at a special ceremony in Versailles, France.

Lane worked at the Dow Corning Corporation for 35 years, where he achieved the rank of research scientist and global S&T director within the corporation for his technical and leadership contributions. In addition, he has held academic positions in both the US and the UK.

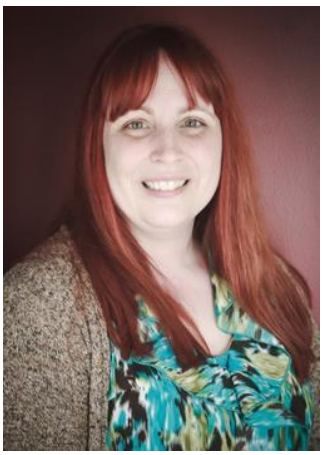
Lane is a Fellow of the Royal Society of Chemistry, an American Chemical Society Fellow, a Sequoyah Fellow of the American Indian Science and Engineering Society, a Life Member of the Society for the Advancement of Hispanic/Chicanos & Native Americans in Science, and has been recognized by a number of other professional organizations. The National Organization of Black Chemists and Chemical Engineers has recognized him with their service award for outstanding contributions to the National Secondary Education Science Program and his continued support for all STEM students.

In 2009, Lane was the elected president of the American Chemical Society, and he later joined the staff of Delta College as chief academic officer and vice president of instruction and learning services. In retirement, Lane remains active in the American Chemical Society and is also serving as the elected associate central regional director for Sigma Xi, a scientific research honor society.

For fun, Lane enjoys photography. He specializes in medium and large format black and white film photography and digital rangefinder cameras.

Michelle Rivard Elected to Executive Committee of ACS Division of Analytical Chemistry

Amanda Palumbo, 2019 Chair, Midland Section ACS



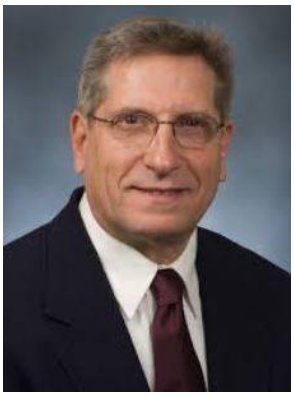
Michelle Rivard (photo at left) has been elected to the Executive Committee of the ACS Division of Analytical Chemistry. As a part of the Executive Committee, Michelle will serve as Secretary for the 2022-2023 term and began in August 2021 as interim Secretary. Michelle is an active member of the Midland Section ACS, currently serving on the Board of Directors as well as Chair of Project SEED and Outreach Committee Co-Chair.

Michelle works for Dow as a Senior R&D Technician in the Core R&D Analytical Science organization focusing on molecular structure and process analysis. "I'm happy to see Michelle expanding her impact to the ACS Division of Analytical Chemistry. Not only will she bring her enthusiasm for service and science, but she will also bring the perspective of technologists to the Division," said Robbyn Prange, 2021 Midland Section Chair.

The American Chemical Society Division of Analytical Chemistry focuses on advancing the science of chemical characterization and measurement to shape the future. For more information on the ACS Division of Analytical Chemistry, visit https://acsanalytical.org/.

Dimitris Katsoulis Elected ACS Fellow

Mark Jones, 2020 Chair, Midland Section ACS



The ACS recently added **Dimitris Katsoulis** (photo at left), known to all as Dimi, to the ranks of its ACS Fellows. The Fellow of the American Chemical Society designation is bestowed on members for their exceptional contributions to the science or profession of chemistry and volunteer service to the ACS community. Dimi is recognized for foundational contributions to the characterization and creation of novel silicones, catalysts for organosilanes, and the commercial impact of these developments, for support of ACS efforts at the local, regional, and national levels, and for leadership and vision demonstrated as Chair of the 2019 Central Regional Meeting.

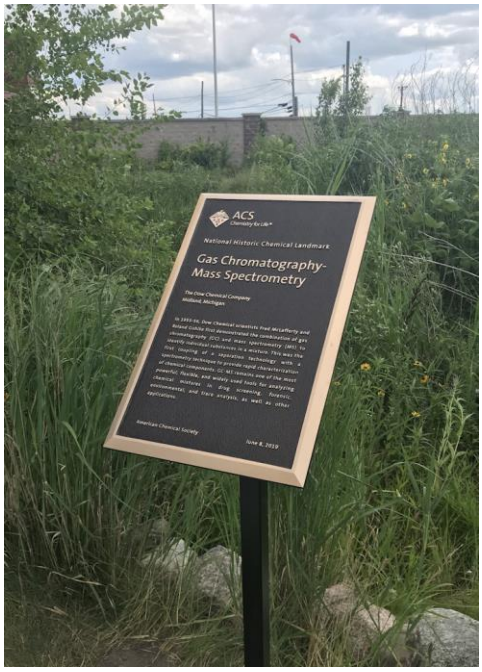
Dimi is currently Principal R&D Fellow at Dow, Inc. The adage "if you only have a hammer, everything looks like a nail" carries a derogatory connotation. It shouldn't always, and certainly not in Dimi's case. Dimi developed technology, a technical hammer, which proved to be just the right tool to solve many challenges in silicone chemistry, and a tool capable of solving long-standing problems. Dimi focused on toughening, on reversing the tendency of silicones to be brittle. Dimi toughened resins by modification of prepolymers, specifically by homogeneously incorporating different length linear silicon-oxygen polymer segments into the three-dimensional polymer network. Short and long chains are mixed, with long chains coiling to produce rubbery domains. The microscopic rubber domains stop propagation of microcracks in an otherwise brittle polymer. The underlying concept and reduction to practice now finds wide utility in a variety of silicone products. It has proved to be a very useful "hammer" in creating and improving a myriad of products.

Dimi is the inventor of over 100 patents, a testament to his productivity and technical prowess. Many of these are on toughening, but not all. He is also credited with important discoveries in processing, catalysis, and other areas of applied chemistry. He leads innovation efforts with younger employees, mentoring them to become future fellows. He shares his time and expertise on numerous topics.

He is also a frequent ACS volunteer. He was recognized as the 2019 Outreach Volunteer of the Year by the Midland Section of the ACS. This recognized Dimi for chairing the 2019 Central Regional Meeting. Dimi drove this meeting to be exceptional by setting a vision and drawing others to follow. He simply would not take no for an answer. Dimi is active in the National Academy of Engineering, since his election in 2017. He is also active in a number of professional societies in addition to the ACS, including The Materials Research Society and The Electrochemical Society. He is a Fellow of the American Association for the Advancement of Science and the American Institute of Chemists.

Invention of Gas Chromatography-Mass Spectrometry

Mark Jones, 2020 Chair, Midland Section ACS, and Member, ACS Committee on Public Relations and Communications and the Chemical Heritage Landmark Committee



"Invention of Gas Chromatography-Mass Spectrometry" was presented to the Division of History of Chemistry at the recent ACS National Meeting. The presentation, given virtually, described the events leading to the first pairing of a gas chromatograph with a mass spectrometer as a detector here in Midland.

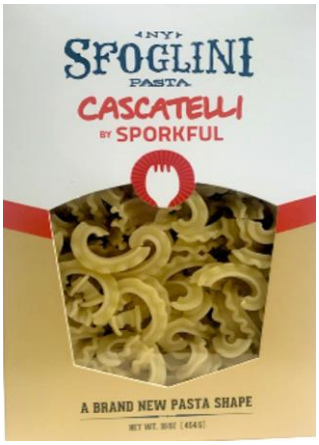
Gas chromatography-mass spectrometry (GC-MS) is arguably one of the most powerful and flexible analytical tools ever developed. It is a prime example of two technologies, each with severe limitations, coupled together and working in concert to produce something that is truly more than the sum of the parts. The journey began in Michigan in 1955, with scientists from the Dow Spectroscopy Lab connecting a GC with a Bendix time-of-flight mass spectrometer. They continued development and refinement, laying the foundation for an analytical tool that remains important to this day.

Midland is now a National Chemical Heritage Landmark for this important advance, recognized in June 2019. The plaque (shown at right) recognizing this landmark is located in the Dow Founder's Park, an area that runs along the Tittabawassee River between the Midland Loons Stadium and the Dow Michigan Division manufacturing site.

Developing A New Pasta: Essential Product Development Lessons for the Chemical Industry

Mark Jones, 2020 Chair, Midland Section ACS, and Member, ACS Committee on Public Relations and Communications and the Chemical Heritage Landmark Committee

Editor's note: This article is reprinted, in part, from the Thursday, August 26, 2021, issue of *ACS Industry Matters Newsletter*, an online news publication of the American Chemical Society.

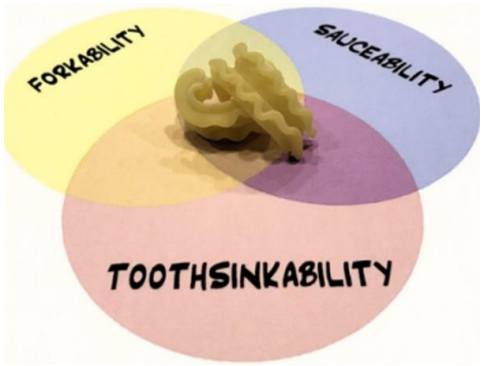


Every product development story starts with an inspiration, an observation that something can be improved, that there is an unmet need. The story of cascatelli, a new pasta shape, begins with recognizing that spaghetti sucks. The surface area of spaghetti noodles is low relative to the volume of the noodles. Sauce simply cannot adhere well. The mouth feel of the noodles suffers. There isn't much noodle to resist your bite. Believing there was a better way powered Dan Pashman's quest to develop and commercialize a new pasta shape.

The cascatelli story is a story worth hearing for anyone doing development and scale-up work in chemicals and materials. Creating a new pasta addresses a market where incumbents exist, as is most commonly the case with chemicals and materials. Scale loomed large, as is commonly the case with chemicals and materials. It is a story documented in an interesting series of audio podcasts. The

story of cascatelli describes many of the common challenges and many of the characters inhabiting many new product development stories.

Dan, the passionate inventor in this story, does a very smart thing. Before trying to invent an improvement to spaghetti, he delves into the competitive landscape. Even smarter, as he evaluates the competition, he develops three unambiguous metrics to guide comparison. Forkability, sauceability, and toothsinkability form the basis for assessing the competitive landscape and, ultimately, to guide invention. Forkability is a measure of the ease of getting the pasta shape onto a fork and keeping it there. Sauceability measures how the shape retains sauce. Measuring how satisfying the pasta is to sink your teeth into is toothsinkability.



The study of competing pasta shapes convinces Dan that he's onto something. The reason there are so many pasta shapes is that the incumbent shapes all are deficient when measured against the metrics. Three clear metrics enable systematic comparison of existing pasta shapes. The metrics are also amazingly useful in describing the unmet need in a clear and unambiguous way, important for recruitment of others to the quest.

Testing the idea with experts is where Dan smartly heads next. It is during this phase that a common character in product development stories emerges, the nay-sayer. He approaches experts at the Durum Wheat Quality and Pasta Processing Laboratory, also known as The Pasta Lab, at North Dakota State University in Fargo. They question the quest. Maureen Fant, a pasta historian, said she would not encourage anyone to invent a new pasta shape. Chris Maldari, Vice President at D. Maldari & Sons, one of the largest manufacturers of pasta dies, pulls no punches. He illuminates challenges in not only coming up with an improved shape, but also in the cost and complexity of getting it made. "I can't tell you that you're going to get anywhere with this idea," Chris tells Dan.

Dan, true to the passionate inventor archetype, refuses to take no for an answer. He finds a way. The die gets made and, after some adjustments, is able to make exactly the pasta shape that Dan desires, long noodles with a thicker region at the center delivering forkability and toothsinkability. Sauce clings to frilly edges to deliver sauceability.

Pasta die in hand, Dan now faced the challenge of scale-up. Early in my career, I was taught this adage about scale-up: Good, fast, or cheap. Pick no more than two. It embodies the recognition that trade-offs are inevitable. Dan desired to make a long, flat pasta. Technical challenges force reconsidering the shape due to economics. Problems with boxing long frilly pasta means large boxes and high cost. Dan pivots to a short pasta. He compromises.

Scaling production is part of the story I found particularly illuminating. I've spent countless hours describing the impact of scale in chemical production. The importance of scale in pasta wasn't immediately evident to me, but economics and consolidation drove pasta production to larger and larger scales. Dan first encountered consolidation with the pasta die. D. Maldari & Sons joined up with De Mari Pasta Dies, their major competitor, in 2018. There was only one choice for die production, thanks to consolidation. Scale drove consolidation in pasta production.

Pasta seems like something where scale wouldn't matter, small local producers should be viable. Small, regional pasta makers were bought up and shut down as larger and larger factories gained economies of scale, benefitting from improved production and supply chain economics. A typical pasta train produces over 85 million pounds per year, 10,000 pounds per hour. Lines of that scale just can't economically shift to make the total 5,000 pound run that Dan desired. Scale and consolidation impact other commodity food items. Bread. Eggs. Milk. All are seeing the number of production facilities decrease even as the overall markets increase. Exactly the trends seen in chemicals and materials.

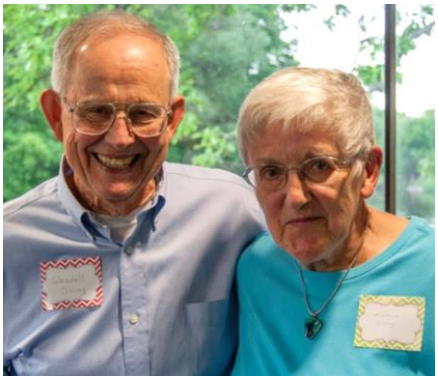
Dan's identification of a compelling need, evaluation of competing technology, consultation with experts, and willingness to collaborate is a great roadmap for product development. The characters who populate his story are common to many product development stories. The technical expert curmudgeon that turns into a champion, the technical enabler, and, of course, the passionate inventor. He unexpectedly encountered something quite common in the chemical industry, the challenge of scale. In overcoming scale-up and other obstacles, the story of cascatelli is one worth hearing for anyone doing development in chemicals and materials.

Midland Section ACS Scholarship Fund Challenge

Gina Malczewski, Director and Scholarship Committee, Midland Section ACS

The Midland Section of the ACS has been proud to offer scholarships to deserving undergraduate students majoring in a chemical science since 2002. Annually, two to four scholarships are awarded to candidates who have graduated from a high school in one of the Section's five counties (Bay, Midland, Saginaw, Isabella, and Gratiot), are studying at a Michigan University, and are ideally intending to pursue a career in some aspect of chemistry or chemical engineering. Selections are made by a committee and are based on academics, service, and extracurricular contributions, and an essay on the student's sources of motivation as well as future plans.

Awards usually range from $1,000-2,000, depending on the financial performance of the Midland ACS Scholarship Fund (#399) administered through the Midland Area Community Foundation. A long-standing goal of the Section has been to raise the base amount to $100,000 to serve more students.



Dr. Wendell and Marcia Dilling (photo at right), both trained chemists and stalwart supporters of our Local Section, are now prepared to help us reach that goal by donating up to $18,000 as part of a Challenge Grant to the Scholarship Fund, which currently stands at $64,953.22. **They will match 1:1 any new contributions to the fund at the Midland Area Community Foundation over the next couple of years ($18,000 X 2 + $64,953.22 = $100,953.22).**

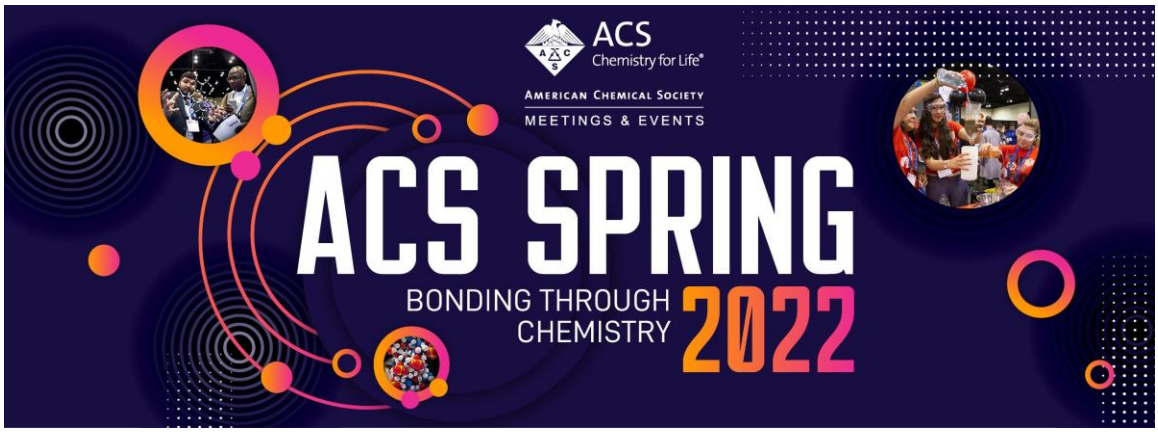
Please consider contributing to this worthwhile cause. **Your donations will help shape the future of chemistry!** If you have any questions about contributing to the Midland ACS Scholarship Fund, please call the Midland Area Community Foundation at 989-839-9661. Thank you.

An online donation form can be found through the following link:
Midland Section American Chemical Society Endowed Scholarship Fund #399

Call for Abstracts for ACS Spring 2022 National Meeting

ACS Meetings & Expositions

Editor's note: The information contained in this article is reprinted, in part, from an e-mail message sent from the ACS Meetings & Expositions team to all ACS members, dated August 25, 2021.



Abstracts for oral and poster presentations for the ACS Spring 2022 National Meeting will be accepted until Monday, October 11. The theme, *Bonding Through Chemistry*, will be at the core of the programming.

Sessions for the hybrid meeting (in-person and virtual) will be held in San Diego, CA, and virtually, March 20 - 24, 2022. Those who wish to submit an abstract will have the option of selecting a virtual or an in-person abstract submission.

While the ACS Spring 2022 National Meeting & Exposition is planned as a hybrid event, we continue to carefully monitor the situation relative to the COVID-19 pandemic and its potential impacts on the meeting. ACS will provide additional updates about the meeting as they become available.

Please see Call for Abstracts - American Chemical Society (acs.org) to find a list of the programming divisions and planned symposia open for submissions.

Upcoming Dates, Events, and Other Updates

- September 7 (7:00 – 8:00 PM) – Hybrid Midland Section ACS Board meeting, Primrose Retirement Community Clubhouse, 5600 Waldo Avenue, Midland (in person), and via a WebEx conference call connection at Cisco Webex Meeting - September 2021, phone number: 989-633-1166. **Please note: This Board meeting is being held on Tuesday evening, not the usual Monday evening.**
- September 17 – **Deadline for abstract submissions for virtual poster presentations for the October 22 *Equity in STEM Symposium*, and for oral and poster presentations for the October 23 Virtual Fall Scientific Meeting.** For more information, please see ACS 2021 FSM (google.com).
- September 22 (6:15 – 7:15 PM) – Sprouts and STEMs Garden Program *Pizza Plants and Garden Greens*, co-sponsored by Creative 360 and Midland Section ACS. Location: Creative 360, 1517 Bayliss Street, Midland. Registration is required at https://becreative360.org/classes/ or by calling 989-837-1885 so that adequate supplies can be obtained. For questions, please contact Gina Malczewski at reginamalczewski@gmail.com.

- October 4 (7:00 – 8:00 PM) – Hybrid Midland Section ACS Board meeting, Primrose Retirement Community Clubhouse, 5600 Waldo Avenue, Midland (in person), and via a WebEx conference call connection at Cisco Webex Meeting - October 2021, phone number: 989-633-1166.
- October 6 (7:00 PM) – MSU St. Andrews Family Astronomy Night program via Zoom. Presentation topic: *Deep Sky Objects*. For more information, please see Family Astronomy Night – MSU St. Andrews.
- October 11 – **Deadline for abstract submissions for the ACS Spring 2022 National Meeting**. This meeting is being planned as an in-person and virtual hybrid meeting. Meeting theme: *Bonding Through Chemistry*. For more information, please see Call for Abstracts - American Chemical Society (acs.org).
- October 22 (12:30 – 5:00 PM) – *Equity in STEM Symposium*, a Midland Section ACS sponsored virtual symposium poster session event held the afternoon before and in conjunction with the 2021 Fall Scientific Meeting. **The deadline for abstract submissions for poster presentations is Friday, September 17**. For more information, please see ACS 2021 FSM (google.com). For any questions, please contact the STEM symposium co-organizers, Gina Malczewski at reginamalczewski@gmail.com or Bingbing Li at li3b@cmich.edu.
- October 23 (8:00 AM – 5:00 PM) – 2021 Midland Section ACS Virtual Fall Scientific Meeting. Meeting theme: *Fast or Slow … Chemistry Makes it Go!* See the meeting flyer in this newsletter for more information. Register at https://sites.google.com/view/acs-2021-fsm/home. **The deadline for abstract submissions for oral and poster presentations is Friday, September 17.** Please submit your abstracts to acsfallsubmits@gmail.com. For more information, see ACS 2021 FSM (google.com).
- November 1 (7:00 – 8:00 PM) – Hybrid Midland Section ACS Board meeting, Primrose Retirement Community Clubhouse, 5600 Waldo Avenue, Midland (in person), and via a WebEx conference call connection at Cisco Webex Meeting - November 2021, phone number: 989-633-1166.
- December 6 (7:00 – 8:00 PM) – Hybrid Midland Section ACS Board meeting, Primrose Retirement Community Clubhouse, 5600 Waldo Avenue, Midland (in person), and via a WebEx conference call connection at Cisco Webex Meeting - December 2021, phone number: 989-633-1166.
- January 3 (tentative date) (7:00 – 8:00 PM) – Hybrid Midland Section ACS Board meeting, Primrose Retirement Community Clubhouse, 5600 Waldo Avenue, Midland (in person), and via a WebEx conference call connection at Cisco Webex Meeting - December 2021, phone number: 989-633-1166.
- February 7 (tentative date) (7:00 – 8:00 PM) – Hybrid Midland Section ACS Board meeting, Primrose Retirement Community Clubhouse, 5600 Waldo Avenue, Midland (in person), and via a WebEx conference call connection at Cisco Webex Meeting - December 2021, phone number: 989-633-1166.
- March 7 (tentative date) (7:00 – 8:00 PM) – Hybrid Midland Section ACS Board meeting, Primrose Retirement Community Clubhouse, 5600 Waldo Avenue, Midland (in person), and via a WebEx conference call connection at Cisco Webex Meeting - December 2021, phone number: 989-633-1166.
- March 20-24, 2022 – ACS Spring 2022 National Meeting and Exposition, San Diego, CA. This meeting is being planned as an in-person and virtual hybrid meeting. Meeting theme: *Bonding Through Chemistry*. For more information, please see Call for Abstracts - American Chemical Society (acs.org).
- April 4 (tentative date) (7:00 – 8:00 PM) – Hybrid Midland Section ACS Board meeting, Primrose Retirement Community Clubhouse, 5600 Waldo Avenue, Midland (in person), and via a WebEx conference call connection at Cisco Webex Meeting - December 2021, phone number: 989-633-1166.

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